

## Dimitris Menemenlis — Curriculum Vitae

Jet Propulsion Laboratory, California Institute of Technology  
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### **Education:**

B.Eng. Honours, McGill University, Montreal, Quebec, Canada, 1984.

M.A.Sc., Waterloo University, Ontario, Canada, 1987.

Thesis topic: Alternative Devices and Converter Configurations for D.C. Power Transmission.

Thesis advisor: John Reeve.

Ph.D., University of Victoria, British Columbia, Canada, 1993.

Thesis topic: Acoustical measurement of velocity, vorticity and turbulence in the Arctic boundary layer beneath ice. Thesis advisor: David Farmer.

### **Recent Employment:**

1998–present: Research Scientist. Jet Propulsion Laboratory, California Institute of Technology, Pasadena. ■

1993–1998: Research Scientist. Earth, Atmospheric, and Planetary Sciences, Massachusetts Institute of Technology, Cambridge. Research advisor: Carl Wunsch. ■

### **Committees and Science Teams:**

US CLIVAR Scientific Steering Committee, 2013–2014.

US CLIVAR Phenomena Observations and Synthesis Panel Co-Chair, 2013–2014.

NASA Carbon Monitoring System Science Team, 2012–present.

US CLIVAR Phenomena Observations and Synthesis Panel Member, 2011–present.

NASA Ocean Vector Wind Science Team, 2010–present.

NASA Sea Surface Temperature Science Team, 2008–2013.

AMS Committee on Polar Meteorology and Oceanography, 2006–2010.

**Languages:** English, French, and Greek.

### **Publications:**

- D. Halkides, D. Waliser, T. Lee, D. Menemenlis, and B. Guan, 2015: Quantifying the processes controlling intraseasonal mixed-layer temperature variability in the tropical Indian Ocean. *J. Geophys. Res.*, doi:10.1002/2014JC010139.
- D. Halpern, D. Menemenlis, and X. Wang, 2015: Impact of data assimilation on ECCO2 Equatorial Undercurrent and North Equatorial Countercurrent in the Pacific Ocean. *J. Atmos. Ocean Tech.*, **32**, 131–143.
- L. Ott, S. Pawson, G. Collatz, W. Gregg, D. Menemenlis, H. Brix, C. Rousseaux, K. Bowman, J. Liu, A. Eldering, M. Gunson, S. Kawa (2015). Assessing the magnitude of CO<sub>2</sub> flux uncertainty in atmospheric CO<sub>2</sub> records using products from NASA's Carbon Monitoring Flux Pilot Project. *J. Geophys. Res.*, **120**, doi:10.1002/2014JD022411.
- J. Whitefield, P. Winsor, J. McClelland, and D. Menemenlis, 2015: A new river discharge and river temperature data set for the pan-Arctic region. *Ocean Modelling*, doi:10.1016/j.ocemod.2014.12.012.
- B. Dushaw and D. Menemenlis (2014). Antipodal acoustic thermometry: 1960, 2004. *Deep-Sea Res. I*, **86**, 1–20.
- J. Liu, K. Bowman, M. Lee, D. Henze, N. Bouscerez, H. Brix, D. Menemenlis, L. Ott, S. Pawson, R. Nassar, D. Jones, and G. Collatz (2014). Carbon monitoring system flux estimation and attribution (CMS-Flux): impact of ACOS-GOSAT XCO<sub>2</sub> sampling on the inference of terrestrial biospheric sources and sinks. *Tellus B*, **66**, 22486.
- B. Dushaw, P. Worcester, M. Dzieciuch, and D. Menemenlis (2013). On the time-mean state of ocean models and the properties of long-range acoustic propagation. *J. Geophys. Res.*, **118**, 4346–4362.

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- M. Manizza, M. Follows, S. Dutkiewicz, D. Menemenlis, C. Hill, R. Key (2013). Changes in the Arctic Ocean CO<sub>2</sub> sink (1996-2007): A regional model analysis. *Global Biogeochem. Cycles*, **27**, 1108–1118.
- R. Reynolds, D. Chelton, J. Roberts, M. Martin, D. Menemenlis, and C. Merchant (2013). Objective determination of feature resolution in two sea surface temperature analyses. *J. Clim.*, **26**, 2514–2533.
- Y. Xu, E. Rignot, I. Fenty, D. Menemenlis, and M. Flexas (2013). Subaqueous melting of Store Glacier, West Greenland from three-dimensional, high-resolution numerical modeling and ocean observations. *Geophys. Res. Lett.*, **40**, 4648–4653.
- M. Miller, J. Adkins, D. Menemenlis, and M. Schodlok (2012). The role of ocean cooling in setting glacial southern source bottom water salinity. *Paleoceanography*, **27**, PA3207.
- A. Nguyen, R. Kwok, and D. Menemenlis (2012). Source and pathway of the Western Arctic upper halocline in a data-constrained coupled ocean and sea ice model. *J. Phys. Oceanogr.*, **43**, 802–823.
- E. Rignot, I. Fenty, D. Menemenlis, and Y. Xu (2012). Spreading of warm ocean waters around Greenland as a possible cause for glacier acceleration. *Annals of Glaciology*, **53**, 257–266.
- M. Schodlok, D. Menemenlis, E. Rignot, and M. Studinger (2012). Sensitivity of the ice shelf ocean system to the sub-ice shelf cavity shape measured by NASA IceBridge in Pine Island Glacier, West Antarctica. *Annals of Glaciology*, **53**, 156–162.
- Y. Xu, E. Rignot, D. Menemenlis, and M. Koppes (2012). Numerical experiments on subaqueous melting of Greenland tidewater glaciers in response to ocean warming and enhanced subglacial discharge. *Annals of Glaciology*, **53**, 229–234.
- A. Nguyen, D. Menemenlis, and R. Kwok (2011). Arctic ice-ocean simulation with optimized model parameters: approach and assessment. *J. Geophys. Res.*, **116**, C04025.
- G. Spreen, R. Kwok, and D. Menemenlis (2011). Trends in Arctic sea ice drift and role of wind forcing: 1992–2009. *Geophys. Res. Lett.*, **38**, L19501.
- M. Manizza, M. Follows, S. Dutkiewicz, D. Menemenlis, J. McClelland, C. Hill, B. Peterson, and R. Key, 2011: A model of the Arctic Ocean carbon cycle. *J. Geophys. Res.*, **116**, C12020.
- X. Davis, L. Rothstein, W. Dewar, and D. Menemenlis (2011). Numerical investigations of seasonal and interannual variability of North Pacific Subtropical Mode Water and its implications for Pacific climate variability. *J. Clim.*, **24**, 2648–2665.
- M. Losch, D. Menemenlis, P. Heimbach, J. Campin, and C. Hill (2010). On the formulation of sea-ice models. Part 1: Effects of different solver implementations and parameterizations. *Ocean Modelling*, **33**, 129–144.
- P. Heimbach, D. Menemenlis, M. Losch, J. Campin, and C. Hill (2010). On the formulation of sea-ice models. Part 2: Lessons from multi-year adjoint sea ice export sensitivities through the Canadian Arctic Archipelago. *Ocean Modell.*, **33**, 145–158.
- A. Nguyen, D. Menemenlis, and R. Kwok (2009). Improved modeling of the Arctic halocline with a sub-grid-scale brine rejection parameterization. *J. Geophys. Res.*, **114**, C11014.
- A. Condron, P. Winsor, C. Hill, and D. Menemenlis (2009). Response of the Arctic freshwater budget to extreme NAO forcing. *J. Climate*, **22**, 2422–2437.
- M. Manizza, M. Follows, S. Dutkiewicz, J. McClelland, D. Menemenlis, C. Hill, A. Townsend-Small, and B. Peterson (2009). Modeling transport and fate of riverine dissolved organic carbon in the Arctic Ocean. *Global Biogeochem. Cycles*, **23**, GB4006.
- N. Gruber, M. Gloor, S. Fletcher, S. Doney, S. Dutkiewicz, M. Follows, M. Gerber, A. Jacobson, F. Joos, K. Lindsay, D. Menemenlis, A. Mouchet, S. Miller, J. Sarmiento, and T. Takahashi (2009). Oceanic sources, sinks, and transport of atmospheric CO<sub>2</sub>. *Global Biogeochem. Cycles*, **23**, GB1005.

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- B. Dushaw, P. Worcester, W. Munk, R. Spindel, J. Mercer, B. Howe, K. Metzger, T. Birdsall, R. Andrew, M. Dzieciuch, B. Cornuelle, and D. Menemenlis (2009). A decade of acoustic thermometry in the North Pacific Ocean. *J. Geophys. Res.* **114**, C07021.
- D. Menemenlis, J. Campin, P. Heimbach, C. Hill, T. Lee, A. Nguyen, M. Schodlock, and H. Zhang (2008). ECCO2: High resolution global ocean and sea ice data synthesis. *Mercator Ocean Quarterly Newsletter*, **31**, 13–21.
- G. Boezio, D. Menemenlis, and C. Mechoso (2008). Impact of ECCO Ocean State Estimates on the Initialization of Seasonal Climate Forecasts. *J. Climate*, **21**, 1929–1947.
- B. Fox-Kemper and D. Menemenlis (2008). Can Large Eddy Simulation Techniques Improve Mesoscale Rich Ocean Models? Ocean Modeling in an Eddying Regime, ed. Matthew Hecht & Hiroyasu Hasumi, American Geophysical Union, 319–338.
- R. Kwok, E. Hunke, W. Maslowski, D. Menemenlis, and J. Zhang (2008). Variability of sea ice simulations assessed with RGPS kinematics. *J. Geophys. Res.*, **131**, C11012.
- D. Menemenlis, I. Fukumori, and T. Lee (2007). Atlantic to Mediterranean sea level difference driven by winds near Gibraltar Strait. *J. Phys. Oceanogr.*, **37**, 359–376.
- I. Fukumori, D. Menemenlis, and T. Lee (2007). A near-uniform basin-wide sea level fluctuation of the Mediterranean Sea. *J. Phys. Oceanogr.*, **37**, 338–358.
- C. Hill, D. Menemenlis, R. Ciotti, and C. Henze (2007). Investigating solution convergence in a global ocean model using a 2048-processor cluster of distributed shared memory machines. *Scientific Programming*, **15**, 107–115.
- S. Fletcher, N. Gruber, A. Jacobson, M. Gloor, S. Doney, S. Dutkiewicz, M. Gerber, M. Follows, F. Joos, K. Lindsay, D. Menemenlis, A. Mouchet, S. Müller, and J. Sarmiento (2007). Inverse estimates of the oceanic sources and sinks of natural CO<sub>2</sub> and their implied oceanic transport. *Global Biogeochem. Cycles*, **21**, GB1010.
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- D. Menemenlis, I. Fukumori, and T. Lee (2005). Using Green's functions to calibrate an ocean general circulation model. *Mon. Weather Rev.*, **133**, 1224–1240.
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- R. Gross, I. Fukumori, D. Menemenlis, and P. Gegout (2004). Atmospheric and oceanic excitation of length-of-day variations during 1980–2000. *J. Geophys. Res.*, **109**, B01406.
- I. Fukumori, T. Lee, B. Cheng, and D. Menemenlis (2004). The origin, pathway, and destination of Niño3 water estimated by a simulated passive tracer and its adjoint. *J. Phys. Oceanogr.*, **34**, 582–604.

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- R. Gross, I. Fukumori, and D. Menemenlis (2003). Atmospheric and oceanic excitation of the Earth's wobbles during 1980-2000. *J. Geophys. Res.*, **108**, 2370.
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- T. Lee, I. Fukumori, D. Menemenlis, Z. Xing, and L. Fu (2002). Effects of the Indonesian Throughflow on the Pacific and Indian Oceans. *J. Phys. Oceanogr.*, **5**, 1404–1429.
- D. Menemenlis and M. Chechelnitsky (2000). Error Estimates for an Ocean General Circulation Model From Altimeter and Acoustic Tomography Data. *Mon. Weather Rev.*, **128**, 763–778.
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- J. Colosi and the ATOC group (1999). A Review of Recent Results on Ocean Acoustic Wave Propagation in Random Media: Basin Scales. *IEEE J. Oceanic Eng.*, **24**, 138–155.
- B. Dushaw and the ATOC group (1999). Multimegamerter-Range Acoustic Data Obtained by Bottom-Mounted Hydrophone Arrays for Measurement of Ocean Temperature. *IEEE J. Oceanic Eng.*, **24**, 202–214.
- D. Menemenlis (1999). Acoustic Tomography and Ocean Data Assimilation: Past Results and Future Prospects. Proceedings of the International Symposium on Acoustic Tomography and Acoustic Thermometry, Tokyo, Japan, Pp. 199–204.
- D. Menemenlis and the ATOC Consortium (1998). Ocean Climate Change: Comparison of Acoustic Tomography, Satellite Altimetry, and Modeling. *Science*, **281**, 1327–1332.
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- D. Menemenlis, T. Webb, C. Wunsch, U. Send, and C. Hill (1997). Basin-Scale Ocean Circulation from Combined Altimetric, Tomographic and Model Data. *Nature*, **385**, 618–621.
- D. Menemenlis, P. Fieguth, C. Wunsch, and A. Willsky (1997). Adaptation of a Fast Optimal Interpolation Algorithm to the Mapping of Oceanographic Data. *J. Geophys. Res.*, **102**, 10,573–10,584.
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- D. Menemenlis and D. Farmer (1995). Path-Averaged Measurements of Turbulence Beneath Ice in the Arctic. *J. Geophys. Res.*, **100**, 13,655–13,663.
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- D. Menemenlis (1994). Line-Averaged Measurement of Velocity Fine Structure in the Ocean Using Acoustical Reciprocal Transmission. *Int. J. Remote Sensing*, **15**, 267–281.
- D. Menemenlis (1993). Acoustical Measurement of Velocity, Vorticity and Turbulence in the Arctic Boundary Layer Beneath Ice. Ph.D. Thesis, University of Victoria, British Columbia, Canada.

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- D. Menemenlis and D. M. Farmer (1992). Reciprocal Travel Time Scintillation Analysis. *Canadian Acoustics*, **20**, 71–72.
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- D. Menemenlis (1989). Development of a Highly Accurate Positioning System for Towed Bodies and Deep ROV's: Report on Static Trials. JASCO Research Ltd., Sidney, British Columbia, Canada.
- D. Menemenlis and D. M. Farmer (1988). An Acoustic Instrument for Studying the Turbulent Oceanic Boundary Layer in the Arctic. In Vijay K. Bhargava, editor, *Canadian Conference on Electrical and Computer Engineering*, 48–51.
- D. Menemenlis (1987). Alternative Devices and Converter Configurations for D.C. Power Transmission. M.A.Sc. Thesis, Waterloo University, Ontario, Canada.